

What is claimed is:

1. A semiconductor device comprising a semiconductor circuit including:
an active layer; and
an insulating film being in contact with the active layer,
5 wherein the active layer is a semiconductor film formed through a sputtering
method and crystallized while being in contact with the insulating film.
2. A device according to claim 1, wherein a material comprising silicon as a target
and a RF power is used in the sputtering method.
3. A device according to claim 1, wherein the insulating film is formed through the
10 sputtering method.
4. A device according to claim 1, wherein the insulating film includes at least one
selected from the group consisting of a silicon nitride film, a silicon nitride oxide film and
a silicon oxide film.
5. A semiconductor device comprising a semiconductor circuit including:
15 an active layer being formed through a sputtering method on an insulating
surface;
a gate insulating film being in contact with the active layer; and
at least a gate wiring being in contact with the gate insulating film,
wherein the active layer comprises at least a channel forming region, source
20 and drain regions being formed on both sides of the channel forming region.
6. A semiconductor device comprising a semiconductor circuit including:
at least a gate wiring on an insulating surface;

a gate insulating film being in contact with the gate wiring; and
an active layer being formed through a sputtering method and being in contact
with the gate insulating film,

wherein the active layer comprises at least a channel forming region, source
5 and drain regions being formed on both sides of the channel forming region.

7. A device according to claim 5, wherein at least the source drain regions include
a catalytic element being capable of promoting crystallization.

8. A device according to claim 7, wherein the catalytic element includes at least an
element selected from a group consisting of Ni, Fe, Co, Pt, Cu and Au.

10 9. A device according to claim 7, wherein the catalytic element includes at least an
element selected from the group consisting of Ge and Pb.

10. A device according to claim 1, wherein the semiconductor circuit is one selected
from the group consisting of a microprocessor, a signal processing circuit and a high-
frequency circuit.

15 11. A device according to claim 1, wherein the semiconductor device is one selected
from the group consisting of an electro-optical device and an electronic equipment.

12. A device according to claim 11, wherein the electro-optical device is one
selected from the group consisting of a liquid crystal display device, an EL display device,
an EC display device and an image sensor.

20 13. A device according to claim 11, wherein the electronic equipment is one selected
from the group consisting of a video camera, a digital camera, a projector, a goggle

display, a navigation system for vehicles, a personal computer and a portable information terminal.

14. A method for manufacturing a semiconductor device comprising a semiconductor circuit, said method comprising the steps of:

5 forming a semiconductor film through a sputtering method on an insulating surface; and

crystallizing the semiconductor film to form a crystalline semiconductor film.

15. A method for manufacturing a semiconductor device comprising a semiconductor circuit, said method comprising the steps of:

forming a semiconductor film through a sputtering method on an insulating surface;

adding a catalytic element into at least a portion of the semiconductor film, said catalytic element being capable of promoting crystallization; and

15 crystallizing said semiconductor film to form a crystalline semiconductor film.

16. A method for manufacturing a semiconductor device comprising a semiconductor circuit, said method comprising the steps of:

20 forming a semiconductor film through a sputtering method on an insulating surface;

adding a catalytic element into at least a portion of the semiconductor film, said catalytic element being capable of promoting crystallization;

crystallizing said semiconductor film to form a crystalline semiconductor film;
and

reducing a concentration of the catalytic element in the crystalline semiconductor film.

17. A method for manufacturing a semiconductor device comprising a semiconductor circuit, said method comprising the steps of:

- 5 forming a semiconductor film through a sputtering method on an insulating surface;
- forming an insulating film being in contact with the semiconductor film;
- and
- crystallizing said semiconductor film while being in contact with the insulating
- 10 film to form a crystalline semiconductor film.

18. A method for manufacturing a semiconductor device comprising a semiconductor circuit, said method comprising the steps of:

- adding a catalytic element into at least a portion of an insulating surface, said catalytic element being capable of promoting crystallization;
- 15 forming a semiconductor film through a sputtering method;
- forming an insulating film being in contact with the semiconductor film;
- and
- crystallizing said semiconductor film while being in contact with the insulating film to form a crystalline semiconductor film.

20 19. A method for manufacturing a semiconductor device comprising a semiconductor circuit, said method comprising the steps of:

- adding a catalytic element into at least a portion of an insulating surface, said catalytic element being capable of promoting crystallization;
- forming a semiconductor film through a sputtering method;
- 25 forming an insulating film being in contact with the semiconductor film;

crystallizing said semiconductor film while being contact with the insulating film to form a crystalline semiconductor film; and

reducing a concentration of the catalytic element in the crystalline semiconductor film.

5 20. A device according to claim 6, wherein at least the source drain regions include a catalytic element being capable of promoting crystallization.

21. A device according to claim 20, wherein the catalytic element includes at least an element selected from a group consisting of Ni, Fe, Co, Pt, Cu and Au.

10 22. A device according to claim 20, wherein the catalytic element includes at least an element selected from the group consisting of Ge and Pb.

23. A device according to claim 5, wherein the semiconductor circuit is one selected from the group consisting of a microprocessor, a signal processing circuit and a high-frequency circuit.

15 24. A device according to claim 5, wherein the semiconductor device is one selected from the group consisting of an electro-optical device and an electronic equipment.

25. A device according to claim 24, wherein the electro-optical device is one selected from the group consisting of a liquid crystal display device, an EL display device, an EC display device and an image sensor.

20 26. A device according to claim 24, wherein the electronic equipment is one selected from the group consisting of a video camera, a digital camera, a projector, a goggle

display, a navigation system for vehicles, a personal computer and a portable information terminal.

27. A device according to claim 6, wherein the semiconductor circuit is one selected from the group consisting of a microprocessor, a signal processing circuit and a high-
5 frequency circuit.

28. A device according to claim 6, wherein the semiconductor device is one selected from the group consisting of an electro-optical device and an electronic equipment.

29. A device according to claim 28, wherein the electro-optical device is one selected from the group consisting of a liquid crystal display device, an EL display device,
10 an EC display device and an image sensor.

30. A device according to claim 28, wherein the electronic equipment is one selected from the group consisting of a video camera, a digital camera, a projector, a goggle display, a navigation system for vehicles, a personal computer and a portable information terminal.